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SITUATION ESTIMATE

for

PROJECT CHALICE

FISCAL YEARS 1960 and 1961

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1 June 1959

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I INTRODUCTION

1. PURPOSE

a) To provide doctrinal guidance for the planning and conduct of project operations during the FY 1960-61 time period. Due to current events the need for timely minor changes is recognized. This document will be utilized as a common reference and/or departure point for all concerned consistent with the above.

b) Upon approval of the concept the document may be used as the basis for justification of the budget. As such it will be reviewed and revised as necessary and no later than 1 September 1959 in order that it can again become the basis for budgeting and long range planning for FY 1960 and 1961: This to include operational effectiveness, the formulation of policy, tactics and techniques and the determination of operational and R & D requirements.

c) In addition, revisions will be made consistent with the latest technological advancements, the current political and economic situation, and new offensive and defensive concepts as pertains to the national security, in order to provide timely and effective guidance for any follow-on program.

2. BACKGROUND AND HISTORY

a) At the time the Soviet Union and its satellites denied normal access to its territory, the need for a method to collect all kinds of intelligence became readily apparent and the requirement was of the highest priority. The rapid technological advances of the Soviet Union indicated the need for prompt and aggressive action in order to obtain a capability which would satisfy the intelligence requirements.

b) At the request of the highest executive branch of the Government various studies were performed by the most capable scientific groups in the country. All of the studies validated the requirements, emphasized the need for prompt and aggressive action, and recommended the utilization of airborne platforms.

c) To provide the capability for relatively safe overflights, the Lockheed U-2 was developed in 1955. Built into the U-2 was an altitude capability of approximately 70,000 feet which, at that time, was considered almost certain to be in excess of the capability of the USSR to physically interfere. Initially, it was expected that, although the Soviets could not intercept the U-2 with manned aircraft or missiles of any type, they might have a limited capability of tracking the U-2 with radar. This assumption later proved to be correct except for the overly optimistic anticipation that Soviet radar capability would be "limited." It is reasonable to assume that the Soviet capability to intercept will increase

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during the period under discussion. However, as can be seen by reference to Enclosure 1, there is still significant overflight utility remaining in the existing U-2 capability throughout this period. As further pointed out in Enclosure 1, the probability of loss is considered slight, especially if certain selected target areas, which are suspected to have more advanced defensive equipment, are avoided. The use of dispersal and deployment bases for deception with minimum ground time as pertains to the U-2, would greatly impede any efforts of the Soviets to employ special techniques and equipments against the U-2. By critical selectivity of target areas and flight plan routes, the U-2 will be able to continue to operate throughout this period with virtual physical immunity at the beginning, to operations on a calculated risk basis at the end of the period.

d) Diplomatic protests which the USSR has made as a result of the AQUATONE operations in the summer of 1956 and again in early 1958 make it imperative that Project CHALICE operations be conducted in such a manner as to reduce the probability of protest. In the original protest of 1956, the violation of the air space over third countries was considered to have been the primary motivation for the USSR protest. This view continues valid despite a Soviet protest in early 1958 concerning a flight which, although it did not violate a third country, did fly into its radar screen with the resultant possibility that the third country had knowledge that a penetration of the USSR had been made. During the interim, a total of 20 penetrations were made of the USSR and satellite countries without diplomatic protest from any source. Recorded reaction to these flights indicates that the violated countries were, in most instances, aware at the very least that a prohibitive flight was being made. It was further assumed that, in at least some cases, the USSR had equal evidence of overflight by U. S. aircraft as it had in the cases of both the 1956 and 1958 protests. It should be noted that the 1958 protest was not made public. The resultant implication is that the Soviets lacking the physical capability to stop such overflights, are forced to use diplomatic measures. In both protest cases, high U. S. political authority directed that the overflights be stopped immediately. The reaction to the Soviet diplomatic action will probably continue throughout this period and will be taken into consideration for planning and when submitting proposed overflights for political approval.

e) It is felt that the use of dispersal and deployment bases in combination with the fast move concepts (maximum ground time 3 - 5 hours) will deprive the Russians of information concerning origin, termination, etc., and thereby degrade and/or weaken an official protest. This would also allow for more plausible U. S. denial.

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II INTELLIGENCE REQUIREMENTS

1. TARGET SELECTION

Intelligence requirements for penetration flights by Project CHALICE have been established by the Ad Hoc Requirements Committee which is composed of representatives of the Army, Navy, Air Force, Central Intelligence Agency, and the National Security Agency. Requirements encompass the fields of photographic intelligence

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Targets and priorities periodically are reviewed by the committees and revisions are made based on the most current intelligence available from all sources.

2. TASK

Basic to the requirement for early warning of the imminence of a Soviet nuclear attack on the United States is the requirement for reliable information on the present and future Soviet capabilities for such an attack. Such information is also critical to our national defense policy and planning. During the past three years limited CHALICE coverage has been by far the most lucrative source of reliable information on which we have based our estimates of the Soviet capabilities for nuclear attack. At the present time, there is an urgent need for CHALICE coverage of certain objectives and areas known to be, or suspected to be, associated with the three major elements (ballistic missile, aircraft, and nuclear capability of the nuclear threat).

a. The most critical intelligence problem at this time is the status of the Soviet ICBM program, an inherent threat of overriding magnitude. Studies over the past two years by the U. S. Intelligence Community have concluded that CHALICE provides the only available means offering reasonable assurance of obtaining on an immediate basis the required intelligence on the deployment of Soviet ICBMs. Certain rail lines which lend themselves to rail launch or logistic support for fixed sites and test sites are prime search areas for this information. Increased urgency has been lent to the deployment question by recent evidence of ICBM series production. Coverage of the most suspect production facilities may help to confirm this.*

* The [] agreed that the most critical question was guided missiles, though they did not seem to feel it necessary to distinguish between IREM and ICBM. Further, they rate research and development and production as much higher than deployment at this time since evidence on these would permit a judgment of whether there was indeed a threat in existence; their thinking does not put deployment as at all probable now in the case of the ICBM and not "most critical" to look for in the case of the IREM.

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b. Other requirements (not in order of priority) for CHALICE coverage which are also critical to national security are set forth in the following paragraphs.

(1) It is recognized that a part of the Soviet ballistic missile capability may be launched from submarines, nuclear powered or conventional aircraft. Our need is to determine the possible modification of existing craft, construction of new ballistic missile submarines, and employment of both. CHALICE coverage offers the best available means of answering the questions on production, characteristics, and employment of submarines capable of launching ballistic missiles.

(2) The existence of a Soviet IRBM capability is recognized as a fact, although this capability is less critical to the United States than the ICBM. It constitutes an immediate and continuing threat to the West. CHALICE coverage offers the best known means to answer the question of what is the deployment concept and should assist with information on the capability of these weapons, as well as their production.

(3) The Soviet heavy bomber force today possesses an immediate nuclear threat. Intelligence derived from sources other than CHALICE has provided a fairly accurate measurement of the magnitude and capability of this threat. Previous CHALICE coverage has served to confirm and augment this intelligence. However, we also have evidence that the Soviets are developing a follow-on bomber aircraft which may replace the present bomber force. In order to establish the status and magnitude of the Soviet effort in the heavy bomber program, to clarify the interrelationships of this and other Soviet weapons delivery system, and thus to gain a more accurate measurement of the overall Soviet nuclear threat, both present and future, it is also critical that we cover certain key Soviet bomber bases, bomber production sites, and R & D facilities.

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3. TARGETS

Photographic objectives (targets) to fulfill the needs outlined above are as follows: *

* * * * *

4. RELATIONSHIP OF TARGETS TO FORCES

Four of the 30 highest priority targets set forth above are located in the Far East, 12 lie in Central Russia and are accessible [redacted] the remaining 14 targets lie in Western USSR and would be accessible from either Adana [redacted] All targets could be obtained with a minimum of 14 penetration missions, assuming favorable weather and successful equipment operation.

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5. COROLLARY TASKS

Valuable intelligence by-products also can be anticipated as a result of the coverage of the primary systems herein discussed. Route photography can be expected to yield significant details of other Soviet air installations, transportation systems, industrial facilities, IRBM and ICBM

* Deleted because of the high classification it would impose on the overall document. This would restrict its use and defeat the purpose for which it was intended. The target list can be obtained from Project Intelligence as Enclosure No. 5.

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installations, and other economic and military targets which could be of a significance only slightly less than the information we anticipate on primary objectives. One of the outstanding bonus effects that we know will be derived from future exercise of the CHALICE capability will be an increase in our knowledge of Soviet air defense capabilities. Fairly precise data on the general deployment and characteristics of Soviet defensive electronic sites in otherwise inaccessible areas can be obtained through the capability of CHALICE equipment to detect and record electronic intelligence data. This increase in knowledge will result in a firmer base for operational plans that involve employment of our nuclear strike force. It should also be noted that exercise of the CHALICE capability over otherwise largely inaccessible areas of the USSR could reveal installations and activities of a completely unknown but highly significant nature. As a specific by-product, CHALICE photography yields terrain information from which accurate radar navigation and target charts, and radar prediction plates can be constructed. It is also anticipated that this photography will permit resolution of invaluable precise geodetic data which is so essential to the successful destruction of enemy targets by guided missiles.

III CONCEPT OF OPERATIONS

1. EMPLOYMENT

a) In order to fully exploit the operational capability built into the airframe of the U-2, considerable support will be maintained in the form of overseas and ZI bases, highly skilled personnel, and above all, airborne collection equipment. In order for Project CHALICE to have maximum capability, permanent overseas bases will be maintained in Europe at Adana, Turkey, and in the Far East at Atsugi, Japan.

b) In addition, an air base facility within the ZI is necessary to carry on continuing research and development, and, for further perfection of equipment and techniques. Due to the fact that a follow-on aircraft will not be available for approximately 18--24 months every appropriate action will be taken to product-improve the existing capability as pertains to aircraft performance. As pertains to primary mission capabilities, product improvement will be in the form of increased reliability, weight reduction, quantitative and qualitative improvement relating to the end product. In order to offset "end product" degradation due to increased performance, every effort will be made to improve the existing and/or develop new, primary mission capabilities to the extent that the end products will be equal to or better than those now obtained. Therefore, the facilities presently in use at Edwards AFB (North Base) will be maintained throughout the lifetime of the U-2.

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c) The facilities [] will be maintained throughout this period for testing of RAINBOW and other special equipments designed and/or developed for CHALICE, GUSTO and other unknown but sensitive projects that require special and/or expedited handling. The lack of other facilities and/or high costs of providing new facilities have resulted in the assignment of such projects to this facility.

d) Due to insufficient information concerning the vehicle, the exact specifications for a new base to support the follow-on vehicle are not known. It is felt that funds will be required in the second half of the Fiscal Year for construction and/or improvement of runways, hangars, shop facilities, office buildings and living accommodations, in order to support the GUSTO project.

e) The support of the facilities [] will be required for the entire period. Increased activity due to the follow-on program, product improvement of CHALICE, and the special projects mentioned in para c above will have to be provided for.

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f) Certain other facilities will be required for periodic staging and for ferrying of aircraft between the ZI and overseas bases. (Encl #2)

g) As a means of more efficient support for ferrying or brief staging operations, a proposal to install a mobile maintenance capability in a C-130 has been developed by Detachment B. Feasibility has reduced to a considerable degree support requirements formerly levied on staging bases. This system of mobile maintenance has been sufficiently exercised to permit an accurate appraisal of its effects on our current concept of staging operations.

h) (1) As of 26 May 1959, program approval has been granted for the modification and installation of the J-75 engine in four (4) U-2 aircraft. Preliminary flight tests of the clean airplane give a first approximation to the expected altitude increase over an aircraft equipped with the J-57. This approximation and extrapolation of prior slipper tank configuration data is as follows:

| | <u>Initial</u> | <u>Midpoint</u> | <u>Terminal</u> |
|--------------------|----------------|-----------------|-----------------|
| W/O slipper tanks | 4,000' | 3,200' | 2,500' |
| With slipper tanks | 2,500' | 1,800' | 1,000' |

(compared to clean J-57 aircraft)

It is expected that a slight range degradation will be experienced.

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(2) It is believed that a minimum of six aircraft should be modified to the J-75 configuration for the following reasons:

(a) Provide for deployment of two operational aircraft to Atsugi.

(b) Provide for deployment of two operational aircraft to Adana.

(c) Provide two aircraft at Edwards AFB. One to be held in operational ready status for overseas deployment; the other to be used as a test bed for further flight tests.

(3) The assignment of two J-75 equipped aircraft to the overseas locations will provide following benefits:

(a) Adequate in place operational capability to perform overflight missions employing fast stage concept of operation.

(b) Provide sufficient aircraft to maintain pilot proficiency.

(c) Establish adequate logistic requirements and stock levels to maintain mission capability within the respective theatres of operation.

(4) The two aircraft at Edwards AFB will provide an operational spare that could quickly be ferried to either theatre of operation. The sixth aircraft would be used for continued research and development.

(5) In the event only four aircraft are modified it is recommended that they be deployed in following manner:

(a) Two aircraft to Adana.

(b) One aircraft to Atsugi.

(c) One aircraft to Edwards AFB. (This aircraft to be used for continued research and development.)

2. MISSION AND MISSION PLANNING

a) With reference to CIA's responsibilities as pertains to the National Security, the following primary and secondary missions are stated:

1. To conduct overflight and peripheral aerial reconnaissance of the USSR and the USSR satellite countries in order to obtain adequate

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and timely intelligence consistent with the provisions mentioned in Section II "Intelligence Requirements."

2. To conduct overflight and peripheral aerial reconnaissance on a world-wide basis in order to obtain adequate and timely intelligence which will uphold and advance the national policies and interests of the U. S. as well as safeguard the internal security of the U. S.

b) All of the foregoing has dictated a substantial change from the Project's initial philosophy of operations which envisioned an intensive program of overflights (as many as 30 sorties per month by each of the three detachments) over a limited period of time. The concept which has evolved from experience during the past three years and which will be followed during the period will feature careful selection of highest priority objectives and prudent application of all measures to minimize the probability of a protest.

c) Since it is reasonably sure that the permanent overseas bases are known by the Russians, and their proximity to Russian territory allows for radar surveillance, and the fact that operations from these bases would necessitate penetration of heavily defended areas, more extensive use of staging bases will be required in the future. In addition, it can be assumed that these bases are possibly under visual surveillance. All of which points out the need for greater deception and mobility during this period. It is planned that future Project CHALICE missions will be directed against areas in which the Soviets have the least radar tracking capability and in such a manner as to create maximum difficulty for positive tracking. Selection of such areas will be consistent with highest priority target coverage requirements. In addition, every effort will be made to avoid the involvement of third countries (specifically, Soviet satellite nations) either by overflying them on penetration or withdrawal from the USSR, or by permitting them to become knowledgeable, through their radar defenses, that such a penetration is being made. In all operational planning and execution, the safety of the aircraft will be of primary consideration.

3. UTILIZATION

a) Training should be realistic in that wherever possible the results obtained will be useful in the event that the bases and/or areas flown over are denied to the U. S. in the future.

b) Training will include the exercise of mobility plans utilizing airlift to support staging to and from dispersal and deployment bases. Training exercises will be accomplished on the fast move concept with minimum U-2 ground time at any of the bases utilized.

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c) The U-2 will be used in tactical situations and to accomplish peripheral electronic and photographic reconnaissance. The advantages in terms of; training, economy, availability of a timely operational capability, have been demonstrated during the past fiscal year/ [redacted]

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[redacted] It is felt that we stand to lose more than we would gain by not doing so. The relative value of the exercise we give the Russian Radars does not outweigh the relative economic and operational reasons for doing so. The Russian radar operators are known to be proficient and the qualitative technical characteristics of their equipment is such that the above-mentioned flights--per se--would not induce greater Russian technological efforts in the radar field. In addition, it is felt that maximum utilization of the U-2 should be planned throughout the estimated operational life of the U-2 rather than wait for primary mission political approval that may never come. In addition, it is felt that knowledge of continued and current successful operations by higher level would be conducive to obtaining political approval.

4. PRIMARY MISSION CAPABILITIES

a) In addition to photographic and electronic collection equipment which would be carried on overflight missions, it will be necessary to maintain weather observation equipment for purposes of cover/ [redacted]

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[redacted] A list of required equipment is attached as Enclosure 3.

5. MAINTENANCE AND SUPPORT

a) In order to maintain the high reliability of aircraft and equipment, the concept of contractor maintenance will be continued. In addition, processing of overflight photography by EK will be continued to insure maximum intelligence exploitation. (Personnel strength will remain as stipulated in current TO's, with possibly one or two minor adjustments.)

6. CONTROL

a) The concept of overflights (and certain other missions) being controlled by Headquarters will be continued to insure efficient target coverage and compatibility of operations with national policy.

7. SORTIE RATE

a) Estimated sortie rate and flying hours by type of mission will be as indicated in Enclosure 4. Approximately 3718 flying hours will be required in FY 60 and 2818 flying hours in FY 61.

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8. SUPPORT

a) Support will be required from the following echelons as indicated. This support will be in accordance with current directives and agreements.

1) Headquarters USAF for military personnel, common logistics, special airlift, and to serve as intermediary on liaison matters. AFCIG-5 will be the channel for support to all subordinate headquarters.

2) Theater Commanders for air base facilities, logistic support, airlift requirements and for special liaison.

3) Strategic Air Command for certain air base facilities, personnel, logistics support and liaison matters.

4) Airways Air Communications System for communications support.

5) Headquarters Air Weather Service for weather support.



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8) Department of State for negotiation for use rights to operate from certain foreign countries.

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IV RELATIONSHIP TO OTHER FORCES



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2. PRE-HOSTILITIES PERIOD

a) If international relationships deteriorate to a point where hostilities are considered imminent, Project CHALICE will conduct penetration and peripheral photographic [] sorties at a maximum rate which available personnel, aircraft and equipment can support. Although the military services have photographic and ELINT collection capabilities in the overseas theaters, the U-2's of Project CHALICE are the only capability in place overseas able to penetrate deeply and with comparative physical immunity.

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b) During this period it will be essential that the maximum amount of potential enemy territory be photographed so as to provide the:

- 1) Most probable time when an enemy attack would be launched.
- 2) Size of the available enemy attack force.
- 3) Type and extent of probable enemy attack.
- 4) Locations from where attacking forces and/or missiles would be launched.
- 5) Overall capability of the enemy to sustain an attack.
- 6) Most current target data for friendly attacking forces to use for retaliation.

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d) During the pre-hostilities period operational control will remain with Project CHALICE Headquarters. Deployment to prearranged rear bases may be necessary as dictated by the existing situation, (Encl. #2). Project CHALICE resources will be utilized, on a first priority basis, to obtain reconnaissance coverage of SAC objectives as outlined in Appendix 1 to Annex "B" of SAC Operations Order #1009.

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3. HOSTILITIES

b) Military personnel will be affected in accordance with the arrangements contained in the Personnel Annex of the above-mentioned transfer agreement.

c) It is planned that civilian personnel will continue to function until relieved by military personnel.

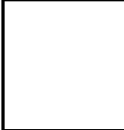



Chief, Operations Branch
DPD-DD/P

WILLIAM BURKE
Acting Chief, DPD-DD/P

Enclosures (4)

Dist.:

Cy 1 - DD/P
Cy 2 - A/C/DPD-DD/P
Cy 3 - Admin/DPD-DD/P
Cy 4 - Cover/DPD-DD/P
Cy 5 - Secur/DPD-DD/P
Cy 6 - Mat/DPD-DD/P
Cy 7 - R&D/DPD-DD/P
Cy 8 - Cont/DPD-DD/P
Cy 9 - Fin/DPD-DD/P
Cy 10 - CC/Ops/DPD-DD/P
Cy 11 - Commo/DPD-DD/P
Cy 12 - Intel/DPD-DD/P
Cy 13 - Ops/DPD-DD/P
Cy 14 - Intel/DPD-DD/P

Cy 15 - 
Cy 16 - 
Cy 17 - 
Cy 18 - 
Cy 19 - SAC Hqs

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ENCLOSURE #3

AIRCRAFT AND EQUIPMENT ASSIGNMENT

FOR FY '60 and '61

The present distribution of aircraft, camera, electronics and other configuration types is considered adequate to satisfy current and proposed operational requirements through Fiscal 1961:

A. Equipment: During staging operations it may be necessary to assign, on a temporary basis, additional equipments from standby storage or divert or interchange equipments between Detachments to meet a particular staging requirement. However, the total numbers and types of configurations now available, either at the Detachments or in supply channels, should satisfy demands of current or forecast operational activity:

Configuration Assignments

| <u>CAMERA EQUIPMENT:</u> | <u>Detachment B</u> | <u>Detachment C</u> | <u>Spares at Depot in ZI</u> |
|--------------------------|---|---------------------|----------------------------------|
| Tracker | 6 | 5 | 0 |
| A-1 | 1* | 1* | 2 |
| A-2 | 3 | 3 | 1 |
| B | 2 | 2 | 2 |
| C | Dropped from the project due to R & D difficulties. | | |

* Plus one spare 6" (HR-730) camera per detachment.

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ENCLOSURE #4

ESTIMATED U-2 FLYING HOURS

| <u>FLY HOURS</u> | <u>FY '60</u> <u>NBR SORTIES/LENGTH HRS</u> | <u>TYPE MISSION</u> | <u>FY '61</u> <u>LENGTH (HRS/NBR SORTIES)</u> | <u>FLY HRS</u> |
|------------------|--|------------------------|--|----------------|
| 135 | 15 9 | Photo penetra- tion | 9 15 | 135 |
| 450 | 50 9 | Photo tactical | 9 50 | 450 |
| 40 | 5 8 | Photo peripheral | 8 5 | 40 |
| 1000 | NA | Ferry/training | NA | 1000 |

| | | | | |
|-----|----------------------------|--|----------------------------|-----|
| 360 | 60 6 | Weather | 6 60 | 360 |
| 200 | 100 2 | R & D, Maintenance Test for Dets B&C | 2 100 | 200 |
| 800 | NA | R & D, Maintenance Test training for ZI Base | NA | 400 |

TOTAL

Note: 1 -

2 - FY 58 Estimate of total flying time
was within 100 hours of actual fly time accomplished.

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